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U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE  
**WATER SUPPLY OUTLOOK**  
**FOR**  
**MONTANA**

and  
FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS  
Collaborating with  
MONTANA AGRICULTURAL EXPERIMENT STATION

AS OF  
APR. 1, 1978



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Montana Water  
Supply Outlook



MOUNTAIN SNOWPACK

THE MOUNTAIN SNOWPACK IS GENERALLY NEAR OR ABOVE AVERAGE. ALL AREAS SHOWED VERY SMALL SNOWFALL AMOUNTS DURING MARCH, MANY LOW ELEVATIONS RECORDED SUBSTANTIAL MELT FOR THIS EARLY IN THE SEASON.

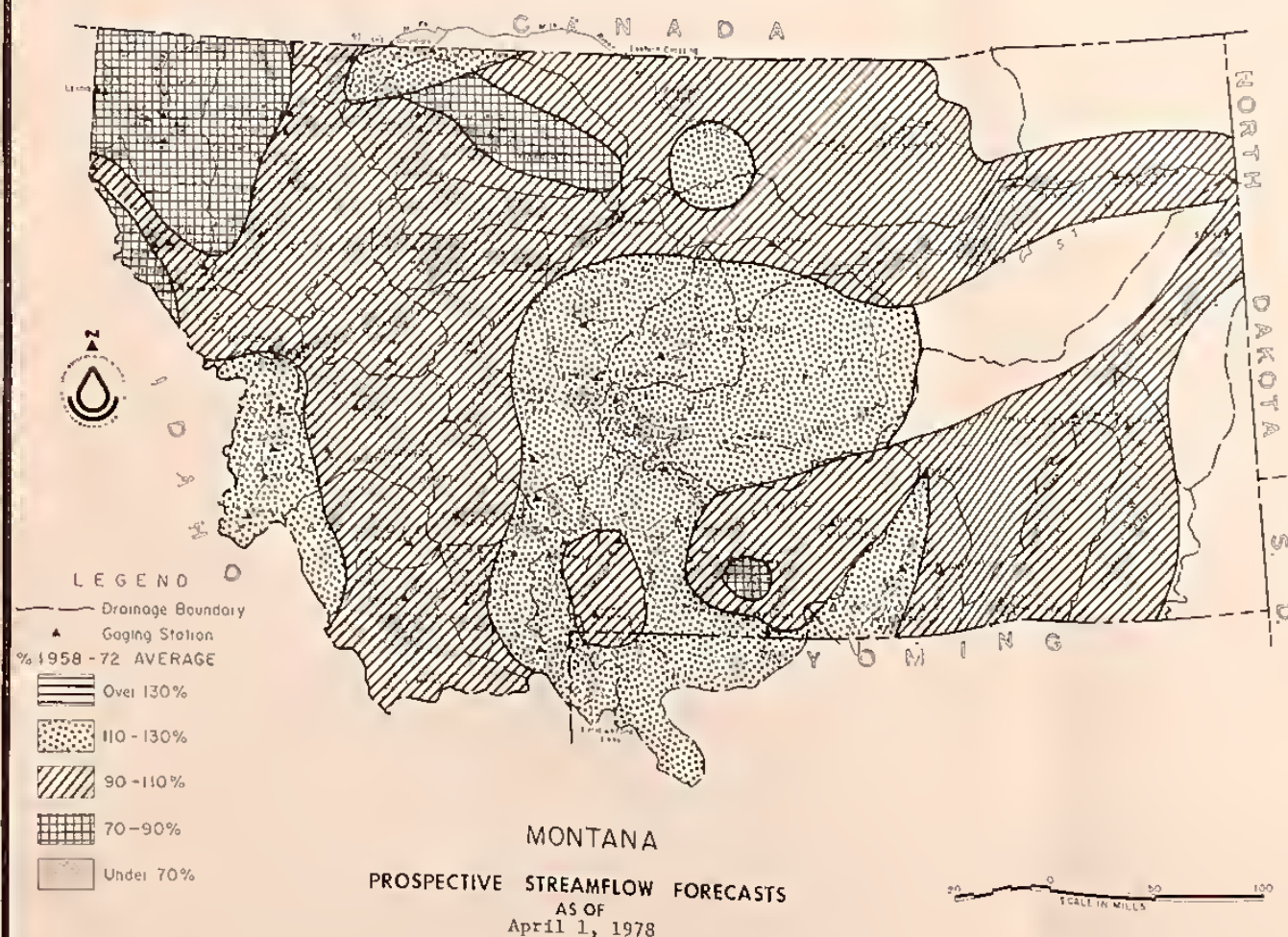
AREAS REPORTING LOW SNOWPACK ARE PORTIONS OF THE BEAVERHEAD RIVER DRAINAGE IN SOUTHWEST MONTANA, PORTIONS OF THE STILLWATER RIVER AND RED LODGE-ROCK CREEK DRAINAGES NEAR RED LODGE AND MOST OF NORTHWEST MONTANA. ABOVE AVERAGE SNOWPACK WAS

MEASURED IN THE SOUTHERN PART OF THE BITTERROOT RIVER DRAINAGE, HEADWATERS OF THE BIG HOLE RIVER, MOST OF THE MADISON RIVER DRAINAGES, AND THE UPPER PORTIONS OF THE YELLOWSTONE RIVER DRAINAGE. ALL OF THE SMALLER MOUNTAIN RANGES IN CENTRAL MONTANA ALSO REPORT ABOVE AVERAGE AMOUNTS OF WATER STORED IN THE SNOWPACK.

ABOVE NORMAL TEMPERATURES THE LAST TWO WEEKS OF MARCH HAVE MELTED MOST OF THE HEAVY PRAIRIE SNOWPACK ACCORDING TO REPORTS FROM COOPERATORS.



STREAMFLOW FORECAST



THE TOTAL RUNOFF FROM APRIL THROUGH SEPTEMBER IS FORECAST TO BE NEAR AVERAGE OVER MUCH OF MONTANA. BELOW AVERAGE RUNOFF IS EXPECTED FROM LOWER SNOWPACK AREAS.

IN THE COLUMBIA RIVER DRAINAGE ALL STREAMS IN THE KOOTENAI RIVER SYSTEM, WESTERN PARTS OF THE FLATHEAD RIVER BASIN AND STREAMS FLOWING INTO THE LOWER REACHES OF THE CLARK FORK.

THE EXTREME HEADWATERS OF THE BEAVERHEAD RIVER AND THE LOWER PORTION OF THE MARIAS RIVER IN THE MISSOURI RIVER DRAINAGE ARE ALSO FORECAST TO HAVE BELOW AVERAGE RUNOFF.

IN THE YELLOWSTONE RIVER DRAINAGE, A LOW VOLUME OF INFLOW TO COONEY RESERVOIR IS FORECAST. ABOVE AVERAGE STREAMFLOW IS EXPECTED FOR MOST STREAMS FLOWING INTO THE BITTERROOT RIVER WEST OF THE DIVIDE. MISSOURI RIVER STREAM SYSTEMS PREDICTED TO HAVE ABOVE AVERAGE RUNOFF ARE THE MADISON AND GALLATIN RIVERS, UPPER PORTIONS OF THE MILK RIVER AND ALL STREAMS DRAINING CENTRAL MOUNTAIN RANGES.

MOST STREAMS ENTERING THE YELLOWSTONE RIVER UPSTREAM FROM BILLINGS ARE EXPECTED TO HAVE ABOVE AVERAGE RUNOFF.

IRRIGATION WATER SUPPLIES ARE EXPECTED TO BE AVERAGE OR ABOVE IN MOST AREAS UNLESS THE ABOVE NORMAL TEMPERATURES AND BELOW NORMAL PRECIPITATION TREND CONTINUES.





# Columbia River Drainage

## MOUNTAIN SNOWPACK

### SUMMARY of SNOW MEASUREMENTS

RIVER BASIN AND SUB-DRAINAGE	Number of Gauging Stations	THIS YEAR'S SNOWPACK AS PERCENT OF
Kootenai/BC	23	122
Kootenai/Montana	20	159
Kootenai	43	144
Little Bitterroot	4	159
Flathead	31	143
Clark Fork above Blackfoot	21	160
Blackfoot	15	150
Clark Fork above Missoula	36	155
Bitterroot	13	191
Lower Clark Fork below Missoula	14	166
Clark Fork (Total w/o Flathead)	63	167
Pend O'Reille (Clark Fork & Flathead)	94	158
Columbia (Pend O'Reille & Kootenai)	137	154
		87

### COLUMBIA RIVER DRAINAGE MONTANA

MOUNTAIN SNOW WATER EQUIVALENT

**KOOTENAI** - BELOW AVERAGE IN MOST AREAS OF MONTANA AND IN BRITISH COLUMBIA, CONSIDERABLE MELT IN LOWER ELEVATIONS DURING MARCH. BELOW AVERAGE SNOWFALL IN HIGHER ELEVATIONS LAST MONTH.

**FLATHEAD** - BELOW AVERAGE IN WESTERN AREAS AND PARTS OF THE MIDDLE FORK, HIGHER ELEVATION SNOWPACK GENERALLY NEAR AVERAGE IN THE SWAN AND MISSION RANGES, SIGNIFICANT MELT IN LOWER ELEVATIONS LAST MONTH. SNOWFALL DURING MARCH WAS WELL BELOW AVERAGE.

**BLACKFOOT** - BELOW AVERAGE OVER MUCH OF THE DRAINAGE, PRIMARILY AS A RESULT OF LOW MARCH PRECIPITATION AND EARLIER THAN NORMAL MELT IN LOWER ELEVATIONS.

**UPPER CLARK FORK** - NEAR AVERAGE

IN MOST AREAS IN UPPER ELEVATIONS, SOME AREAS NEAR BUTTE CONTINUE TO SHOW LOWER THAN AVERAGE SNOWPACK, MELT AT LOWER ELEVATIONS HAS DECREASED THE SNOWPACK TO BELOW AVERAGE LEVELS, LITTLE SNOWFALL DURING MARCH.

**BITTERROOT** - NOT AS HIGH PERCENTAGE OF SNOW COVER AS A MONTH AGO, BUT STILL ABOVE AVERAGE IN SOUTHERN HALF OF THE DRAINAGE, VERY LITTLE INCREASE IN SNOW WATER STORAGE DURING THE PAST MONTH WITH CONSIDERABLE MELT AT LOWER ELEVATIONS.

**LOWER CLARK FORK** - HIGH ELEVATION SNOWPACK HAS ABOUT THE SAME WATER CONTENT AS MEASURED ON MARCH 1, CONSIDERABLE MELT IN LOWER ELEVATIONS, OVERALL SNOWPACK IS BELOW AVERAGE.

### SOIL MOISTURE

SOIL MOISTURE LEVELS HAVE INCREASED WITH RECENT SNOW MELT. MEDIUM ELEVATION SOILS ARE NEAR FIELD CAPACITY WHILE LOWER ELEVATION SOILS ARE DRYING.

### STREAMFLOW FORECASTS

**KOOTENAI** - SEASONAL VOLUMES ARE ABOUT 15 TO 20 PERCENT BELOW AVERAGE.

**FLATHEAD** - A LITTLE BELOW AVERAGE ON MOST TRIBUTARIES, LESS THAN AVERAGE FROM STREAMS WITH LOWER ELEVATION HEADWATERS AND THOSE IN THE WESTERN PART OF THE BASIN.

**BLACKFOOT** - NEAR TO A LITTLE BELOW AVERAGE FOR MOST TRIBUTARIES.

**UPPER CLARK FORK** - MOST STREAMS NEAR AVERAGE EXCEPT FOR A

**LITTLE BELOW AVERAGE FOR THOSE NEAR BUTTE AND ANACONDA.**

**BITTERROOT** - ABOVE AVERAGE IN SOUTHERN PART OF THE DRAINAGE, DECREASING SOMEWHAT FOR THE MORE NORTHERN TRIBUTARIES.

**LOWER CLARK FORK** - ABOUT AVERAGE RUNOFF IN THE CLARK FORK RIVER, BELOW AVERAGE INFLOW FROM THE SMALLER TRIBUTARY STREAMS BELOW MISSOULA.

### WATER SUPPLY OUTLOOK

STREAM IN AREA	Spring Season	Late Season
Tobacco	Avg	Fair
Little Bitterroot	Avg	Fair
Mission Valley	Avg	Avg
Flint Creek	Avg	Avg
Upper Clark Fork	Avg	Avg
Nevada Creek	Avg	Avg
Blackfoot	Avg	Avg
West-side Bitterroot	Ex	Ex
East-side Bitterroot	Ex	Avg
Bitterroot River	Ex	Ex
Lower Clark Fork	Avg	Avg

### IRRIGATION WATER SUPPLIES

MOST STREAMS SHOULD HAVE ABOUT AVERAGE LATE SEASON SUPPLIES EXCEPT FOR ABOVE AVERAGE IN THE BITTERROOT RIVER, ALL STREAMS SHOULD HAVE ADEQUATE EARLY SEASON SUPPLIES, MOST IRRIGATION RESERVOIRS SHOULD FILL WITH SPRING RUNOFF.

### April-September

THIS YEAR FORECAST	PAST RECORD
THOUSAND ACRES	THOUSAND ACRES
Area	Area

### April-July

THIS YEAR FORECAST	PAST RECORD
THOUSAND ACRES	THOUSAND ACRES
Area	Area

### April-June

THIS YEAR FORECAST	PAST RECORD
THOUSAND ACRES	THOUSAND ACRES
Area	Area

DRAINAGE STREAM WITH FORECAST POINT	THIS YEAR FORECAST	PAST RECORD	THIS YEAR FORECAST	PAST RECORD	THIS YEAR FORECAST	PAST RECORD
KOOTENAI RIVER below Libby Dam (1)	6,250	84	3,976	7,456	5,300	83
FISHER RIVER near Libby	248	87	286	235	87	269
YAKA RIVER near Troy	465	82	568	440	81	544
KOOTENAI RIVER at Leona (1)	7,600	84	4,910	9,073	6,680	84
INFLUX MOUTON RESERVOIR at Butte (million gallons)	202	92	103	220	3,844	7,957
WARM SPRINGS CREEK at MEYERS DAM near Anaconda (2)	46.8	92	16.0	50.9	14.0	41.8
FLINT CREEK near Southern Cross (3)	17.0	101	9.0	16.9	14.5	101
FLINT CREEK below Boulder Creek (4)	69.0	96	71.6	54.9	97	56.1
INFLUX LOWER WILLOW CREEK RESERVOIR near Hall (5)	15.0	93	3.4	16.2	14.2	92
MIDDLE FORK ROCK CREEK near Phillipsburg	83.0	109	75.9	75.5	110	68.6
NEVADA CREEK near Finn	20.0	93	21.6	18.5	92	20.1
BLACKFOOT RIVER near Bonner	1,000	97	1,031	900	96	934
CLARK FORK RIVER above Milltown (7)	800	101	792	710	103	690
CLARK FORK RIVER above Missoula	1,800	99	573	1,823	1,610	99
WEST FORK BITTERROOT RIVER near Conner (7)	210	122	172	195	125	473
BITTERROOT RIVER near Darby	675	116	242	584	630	116
SKALAHOO CREEK near Hamilton	63.0	111	56.6	55.5	112	49.6
BURNT FORK CREEK near Stevensville (8)	39.2	111	35.3	34.5	111	31.0
BITTERROOT RIVER at Missoula (9)	1,680	110	1,527	1,570	111	1,412
CLARK FORK RIVER below Missoula	3,480	104	3,350	3,180	105	3,036
CLARK FORK RIVER at St. Regis (NWS)	4,390	97	1,507	4,507	3,980	97
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,770	89	1,991	1,600	88	1,813
MIDDLE FORK FLATHEAD RIVER near West Glacier	1,790	93	1,011	1,917	1,660	94
SOUTH FORK FLATHEAD RIVER near Columbia Falls	2,330	98	1,255	2,378	2,180	97
FLATHEAD RIVER at Columbia Falls (10)	6,000	93	3,180	6,421	5,600	94
SWAN RIVER near Big Fork	695	97	717	615	98	630
FLATHEAD RIVER near Polson (11)	7,180	94	3,600	7,648	6,685	94
CLARK FORK RIVER near Plains (11)(NWS)	11,700	93	5,237	12,601	10,700	93
THOMPSON RIVER near Thompson Falls	245	88	277	220	89	248
PROSPECT CREEK at Thompson Falls	126	86	147	117	85	137
CLARK FORK RIVER at Whitehorse Rapids (12)(NWS)	12,900	92	14,090	11,800	92	12,860

- (1) Adjusted for storage in Lake Kootenai.
- (2) Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake.
- (3) Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.
- (4) Sum Flint Creek at Maxville and Boulder Creek at Maxville.
- (5) Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall.
- (6) Difference in observed flow Clark Fork above Missoula and

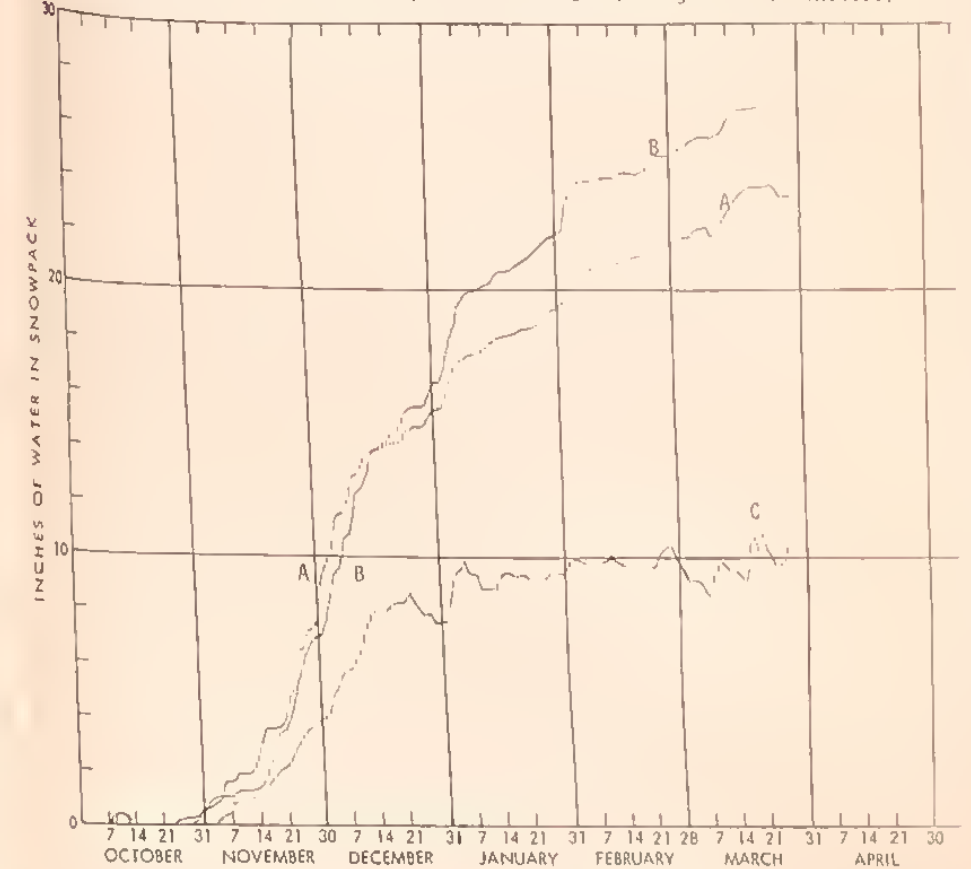
- (7) Blackfoot near Bonner.
- (8) Adjusted for storage in Painted Rocks Reservoir.
- (9) Adjusted for diversion into Sunset Highline Canal.
- (10) Difference in observed flow Clark Fork above and below Missoula.
- (11) Adjusted for storage in Hungry Horse Reservoir.
- (12) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.
- (13) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.
- (14) (NWS) National Weather Service forecast.

Average based on 1958-72 period.

# SNOW SURVEYS

## SUN, TETON, MARIAS, AND FLATHEAD RIVERS

- Mount Lockhart - elevation 6,400 ft., in Teton River drainage west of Choteau.
- Pike Creek - elevation 5,930 ft., near the Middle Fork Flathead-Two Medicine River divide south of Marias Pass between East Glacier and West Glacier.
- Waldron - elevation 5,600 ft., in Teton River drainage west of Choteau.



### SNOW PILLOWS CONTINUOUSLY MEASURE WATER CONTENT IN MONTANA'S SNOWPACK

For many years, snow surveyors have been looking for a sensor that would continuously measure the amount of water stored in the mountain snowpack. The cost of this sensor had to be reasonable, it had to have a minimum of moving parts, and be capable of providing accurate data without sending men into the mountains.

The first "snow pillows" were installed about 15 years ago. These were made of nylon reinforced butyl rubber or neoprene and were generally 6 to 12 feet in diameter. They roughly resembled a water bed. The pillows were placed on the ground and filled with a methylalcohol and water solution to prevent freezing of the solution during cold winter months.

These sensors provided a simple weighing platform for determining the weight of the water in the snowpack. A one inch rise in the fluid level in the shelter house was equivalent to a one inch water equivalent in the snowpack.

The first snow pillow was installed in Montana at Lick Creek, south of Bozeman in the fall of 1963. Since then 57 snow course sites have been instrumented with these sensors. Periodically snow surveyors remove charts from recorders at these sites, usually when making scheduled snow survey measurements. Daily values from these charts are computed and plotted to provide a graphic picture of the snow accumulation and melt.

The snow pillow graphs shown in the snow survey section of this report have been obtained from the recorders on butyl snow pillows. Snowfall periods, rates of snowfall, time when snowpack began accumulating, date and amount of maximum accumulation, melt rates, time of melt-out and

many other comparisons can be obtained from these records. Variations from year to year are used to evaluate runoff generated by melt of the mountain snowpack.

Currently a system called SNOTEL (snow telemetry) is being installed in the Western United States. This system will transmit data from remote snow course locations to the snow survey office. Stainless steel snow pillows are being used as the standard snow sensor for SNOTEL sites. Other types of snow gauges using isotopes and radiation counters are also being tested and evaluated at some snow course sites to see if it is possible to develop a more dependable and more accurate snow sensor.

Once the SNOTEL system is operational, daily data will be used to update water supply forecasts when significant changes occur rather than monthly as is presently done with manual monthly snow surveys. The SNOTEL system will be discussed in future issues.



Butyl snow pillow (6 foot diameter) at Lick Creek data site south of Bozeman, Montana

### BEAVERHEAD-BIG HOLE RIVERS

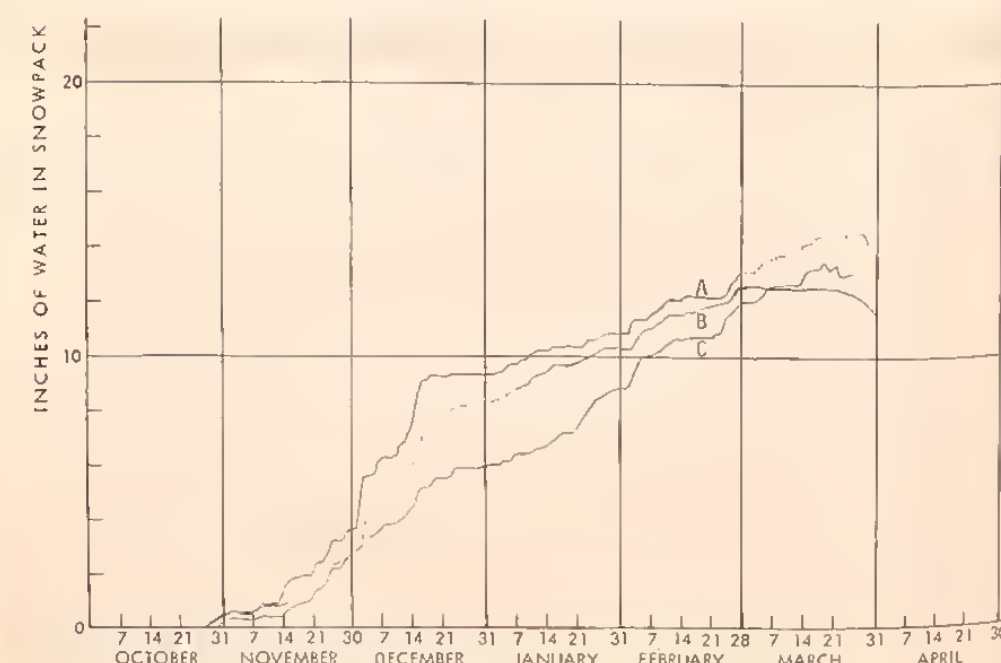
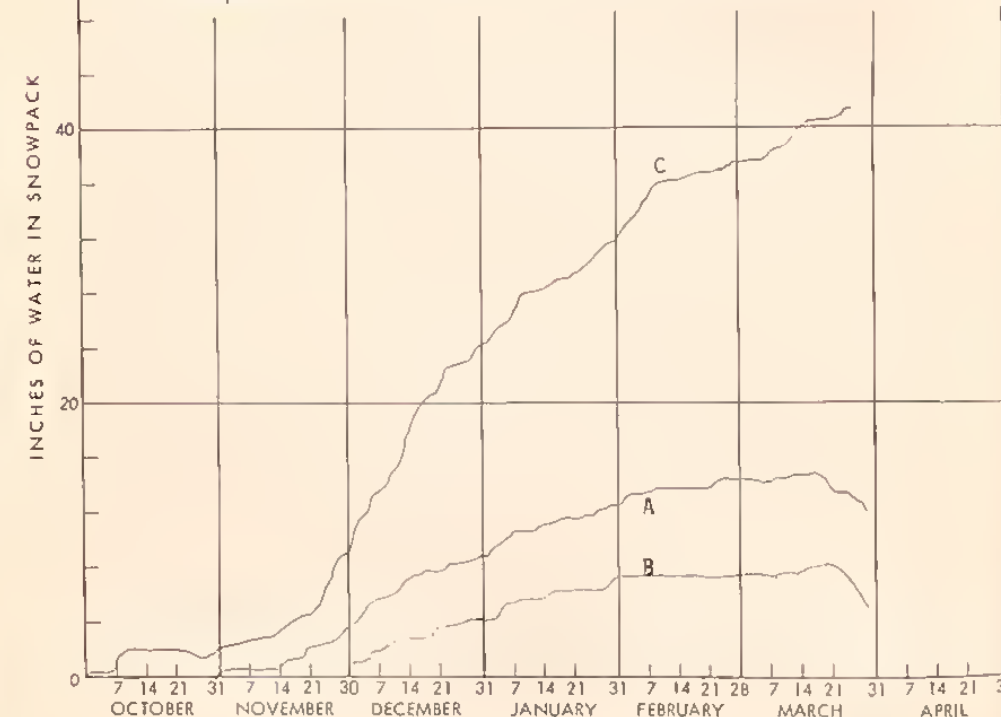
- Bloody Dick - elevation 7,550 ft., on Beaverhead-Big Hole River divide west of Dillon.
- Calvert Creek - elevation 6,430 ft., in Mudd-Calvert Creek drainage north of Wisdom.
- Lemhi Ridge - elevation 8,100 ft., on Montana-Idaho borderline near Lemhi Pass southwest of Dillon.

DRAINAGE BASIN, MOUNTAIN SNOW COURSE	Elevation	Date of Survey	THIS YEAR		PAST RECORD	
			Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	Altitude
ABUNDANCE LAKE	8600	3/28	59	23.8	13.0	20.9
AMHROSE	6480	3/31	28	12.0	8.5	13.8
ARCH FALLS	7350	3/29	37	12.9	10.4	14.0
BALO EAGLE PEAK	5700	3/30	113	52.1	34.1	68.0
HALO MOUNTAIN (WY)	9600	3/29	73	25.8	26.0	23.4
BALO RIDGE	7500	3/29	38	14.9	14.4	14.0
HANFIELD MOUNTAIN	5600	3/31	38	18.6	12.6	25.5
BANFIELD MOUNTAIN PILLOW	5600	3/31	SP	16.5	10.1	21.8
BANEL CREEK	5500	3/29	63	40.6	29.5	49.4
BAKEE MIDWAY	4600	3/29	70	30.6	23.8	37.7
BAKEE TRAIL	3800	3/29	15	5.8	3.6	9.6
BASIN CREEK	7180	3/29	26	5.7	5.4	-
BASSOO PEAK	5150	3/30	20	8.6	5.7	12.0
BAITLE RIDGE	6020	3/30	18	7.7	8.6	7.4
BEAGLE SPRINGS	6850	3/26	30	8.7	5.4	-
BEAR BASIN	8150	3/28	64	25.9	18.6	22.4
BEAR MOUNTAIN (ID)	5400	3/29	108	47.1	30.5	65.7
BEAR PAW SKI AREA	5200	3/28	30	10.2	8.2	6.3
BEHRY MEADOW	7000	3/27	28	9.2	4.8	8.3
BIG CREEK	6750	3/29	112	49.7	33.6	49.7
BIG SKY MEADOW	6350	3/26	28	10.2	7.9	9.0
BIG SNOWY	7150	3/24	75	28.6	-	19.9
BIG SPRINGS (ID)	6500	3/30	50	22.6	7.7	21.3
BLACK BEAR	7950	3/27	106	44.6	17.5	-
BLACK BEAR PILLOW	7590	3/27	SP	42.1	17.8	-
BLACK PINE	7100	3/29	37	14.0	8.7	14.0
BLACK PINE PILLOW	7100	3/29	SP	16.0	8.8	14.2
BLOODY DICK	7600	3/30	38	15.2	6.8	14.0
BLOODY DICK PILLOW	7600	3/30	SP	14.3	7.3	-
BLUE LEDGE MINE (ID)	6700	3/29	44	18.1	5.3	17.2
BOTS SOTS	8000	4/01	16	5.3	5.4	-
BOULDER MOUNTAIN	7950	3/28	62	24.2	12.2	19.5
BOULDER MOUNTAIN PILLOW	7950	3/28	SP	23.6	11.4	-
BOW RIVER #1 (AL)	5100	3/31	26	7.8	5.6	8.9
BOX CANYON	6670	3/31	33	12.7	9.2	-
BRANHAM LAKES	6850	3/30	73	32.0	17.9	31.6
BRIDGER BOWL	7250	3/30	72	32.0	22.7	30.8
BRIDGER BOWL PILLOW	7250	3/30	SP	32.3	22.7	29.6
BRISTOW CREEK	3900	3/31	14	5.9	2.6	13.4
BRUSH CREEK TIMBER	5000	3/29	23	8.8	5.4	10.9
BULL MOUNTAIN	6600	3/30	10	3.9	5.0	-
CABIN CREEK	5200	4/01	20	6.2	4.2	7.4
CALL ROAD	8050	3/26	41	15.6	8.2	12.2
CALVERT CREEK	6450	3/31	40	14.5	5.6	10.6
CALVERT CREEK PILLOW	6450	3/31	SP	10.9	4.8	-
CAMP CREEK (ID)	6800	3/31	25	8.3	2.3	10.4
CAMP MISERY	6400	3/28	118	51.4	42.8	49.6
CAMP SENIA	7890	4/01	18	4.9	5.9	7.2

Average based on 1958-72 period. A - Aerial observation; water content estimated. SP - Snow Pillow observation; water content only.

### FLATHEAD RIVER

- Emery Creek - elevation 4,350 ft., in Emery Creek drainage northeast of Kalispell.
- Meadow Creek - elevation 4,000 ft., in South Fork Flathead River drainage southwest of Hungry Horse. Data from Bonneville Power Admin.
- Noisy Basin - elevation 6,040 ft., in Noisy Creek drainage east of Kalispell.



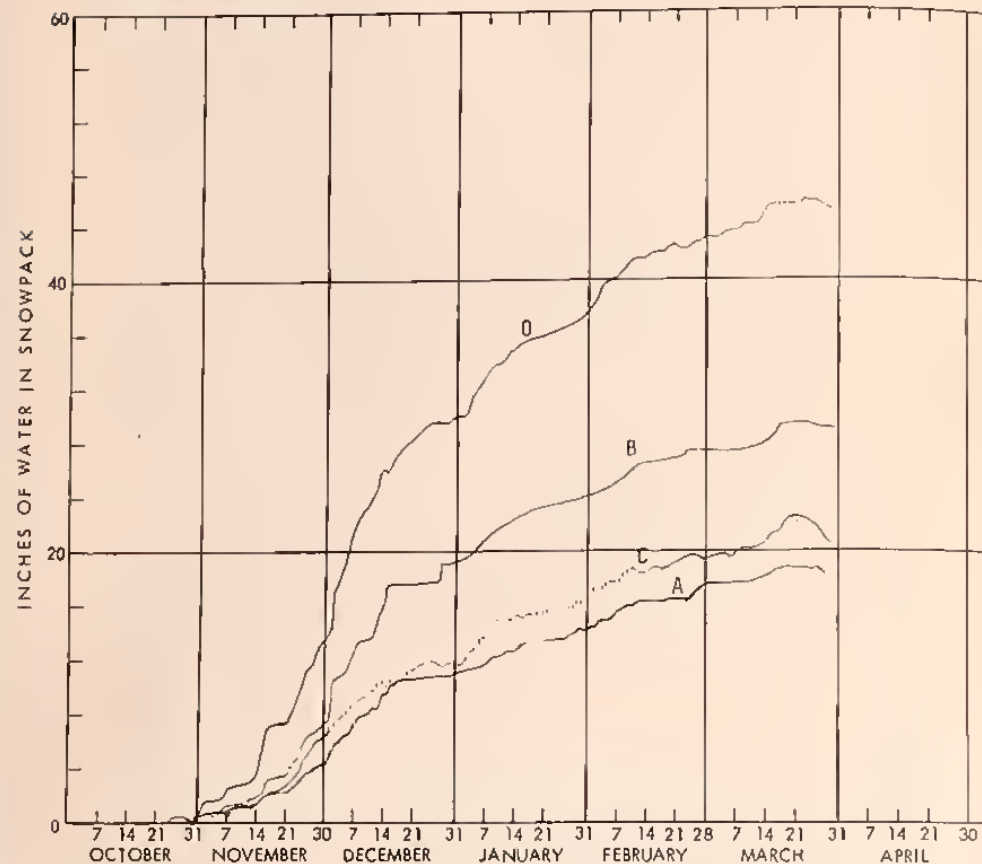




# SNOW SURVEYS

## BITTERROOT-BIG HOLE RIVERS

- A Nez Perce Camp - elevation 5,650 ft., in West Fork Bitterroot River drainage near Nez Perce Pass southwest of Darby.  
 B Saddle Mountain - elevation 7,900 ft., in East Fork Bitterroot River drainage near Lost Trail Pass southeast of Darby and west of Wisdom.  
 C Twelvemile Creek - elevation 5,600 ft., in Lost Horse Creek drainage southwest of Hamilton.  
 D Twin Lakes - elevation 6,400 ft., in Lost Horse Creek drainage southwest of Hamilton.

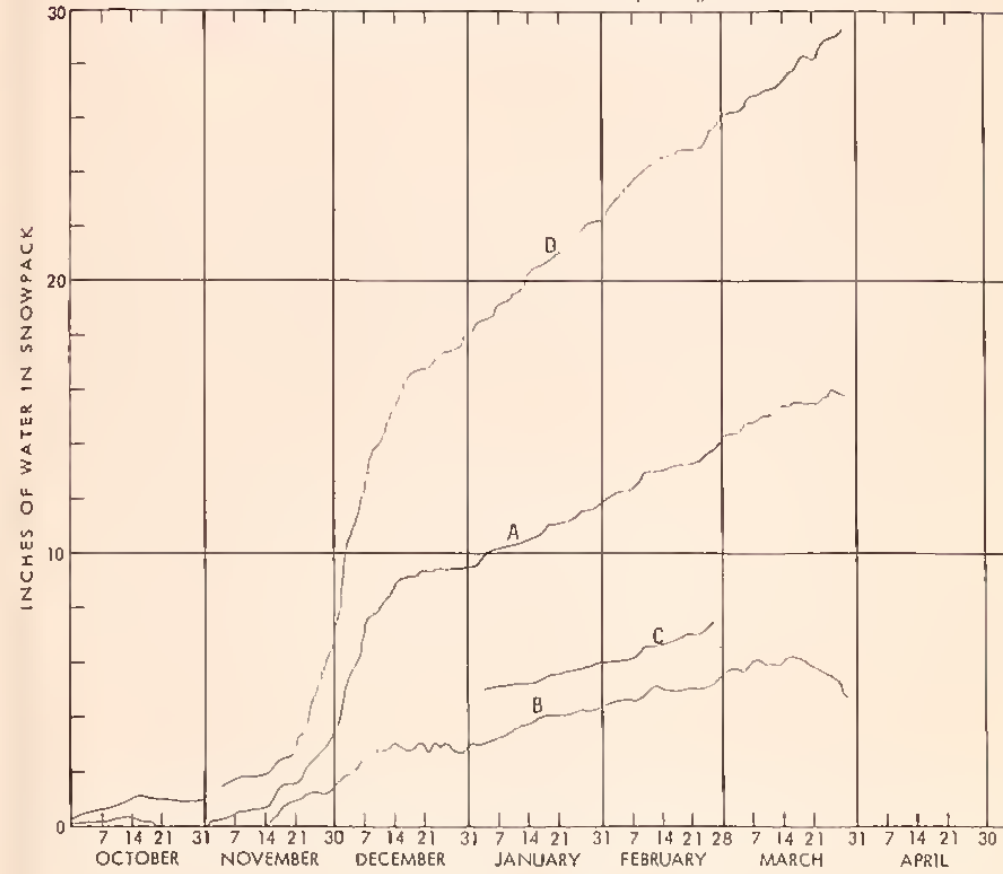


DRAINAGE BASIN and/or SNOW COURSE	Elevation	THIS YEAR			PAST RECORD		
		Date of Survey	Snow Depth (inches)	Water Content (inches)	Water Content (inches)	Last Year	Average
NAME							
CANYON (WY)	7750	4/01	47	18.2	7.2	16.5	
CARROT BASIN	9000	3/30	81	36.0	17.5	38.1	
CARROT BASIN PILLW	9000	3/30	SP	30.4	14.9	28.6	
CEDAR GROVE	4100	3/31	28	11.7	7.1	12.7	
CHATEAU LAWN #6 (AL)	5700	3/30	29	8.5	-	11.1	
CHESSMAN RESERVOIR	6200	3/29	11	5.5	3.2	3.3	
CHICKEN CREEK	4060	3/28	29	13.0	10.4	-	
CLOVER MEADOW	8600	3/26	55	18.8	15.0	18.7	
COLE CREEK	7850	3/30	38	10.8	13.4	-	
COMBINATION	5600	3/29	18	5.2	3.5	8.1	
COMBINATION PILLW	5600	3/29	SP	4.8	4.9	-	
COUKE STATION	8150	3/31	65	27.6	12.4	20.5	
COPPER BUTTOM	5200	3/31	21	7.4	5.7	11.8	
COPPER BOTTOM PILLW	5200	3/31	SP	11.5	7.6	-	
COPPER CAMP	6950	3/31	66	29.8	15.4	35.6	
COPPER CREEK	5700	3/31	29	10.9	6.0	16.3	
COPPER LAKE CREEK	6100	3/31	52	23.0	11.6	25.7	
COPPER MOUNTAIN	7700	3/30	30	10.8	7.9	12.3	
COITONWOOD CREEK	6400	4/03	24	7.2	6.5	-	
COYOTE HILL	4200	3/29	25	9.3	9.7	10.5	
CRIVICE MOUNTAIN	8400	3/30	44	15.5	8.0	10.6	
CRYSTAL LAKE	6100	3/24	48	17.7	21.6	14.5	
DAU CREEK LAKE	8400	3/26	39	12.1	7.7	15.3	
DAISY PEAK	7600	3/30	36	14.0	9.9	11.6	
DALY CREEK	5780	3/28	31	10.1	7.6	-	
DARKHORSE LAKE	8600	3/28	80	32.8	13.6	28.0	
DAVIS CREEK	5400	3/28	49	22.5	13.6	26.5	
DEADMAN CREEK	6450	3/30	36	15.6	13.4	12.7	
DEADMAN CREEK PILLW	6450	3/30	SP	14.4	12.1	11.0	
DESERT MOUNTAIN	5600	3/30	33	13.1	11.7	17.2	
DEVILS SLIUE	8100	3/29	64	25.8	19.4	24.7	
DISCOVERY BASIN	7050	3/27	26	9.5	8.0	-	
DIVIDE	7800	3/26	37	12.2	5.4	11.6	
DIVIDE PILLW	7800	3/26	SP	12.0	6.8	-	
EAGLE CREEK	7000	3/31	45	18.2	15.6	14.9	
EAST BOULDER S	9250	4/03	87	36.5A	23.5	-	
EAST FORK M.S.	5400	3/26	9	2.8	2.9	6.7	
EL DORADO MINE	7800	3/27	62	23.6	12.3	23.1	
ELK HORN SPRINGS	7800	3/26	38	13.8	5.6	9.7	
ELK PEAK	8000	3/27	60	22.5	17.4	19.2	
EMERY CREEK	4350	3/30	29	11.3	11.9	-	
EMERY CREEK PILLW	4350	3/30	SP	11.9	11.7	-	

Average based on 1958-77 period. A - Aerial observation; water content estimated.  
 SP - Snow Pillow observation; water content only.

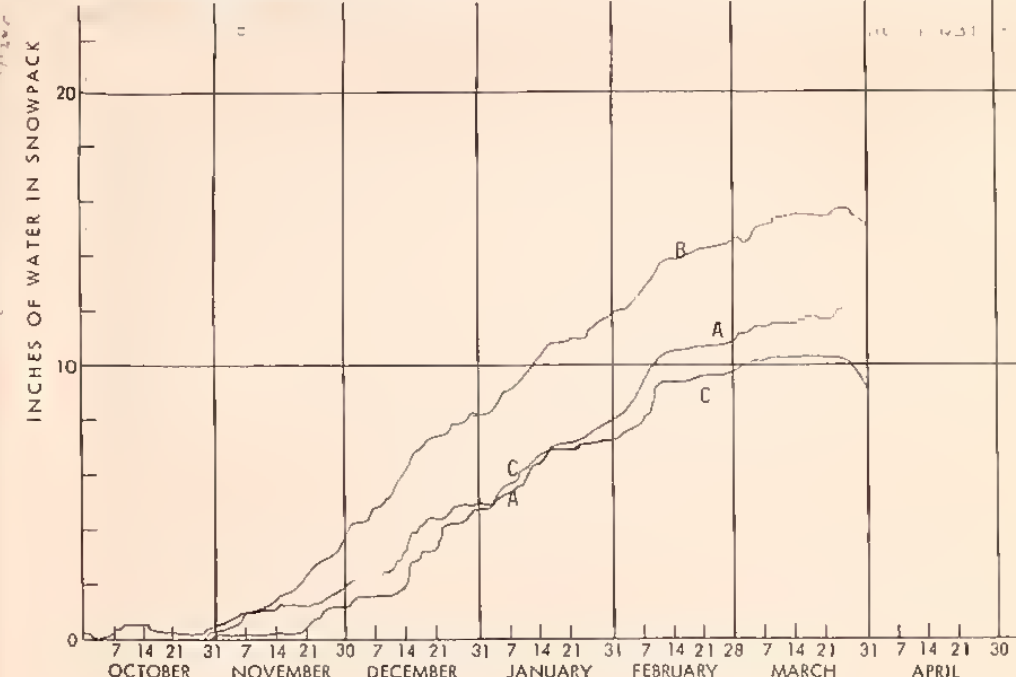
## CLARK FORK-BITTERROOT RIVERS

- A Black Pine - elevation 7,100 ft., in Lower Willow Creek drainage near Black Pine Lookout northwest of Philipsburg.  
 B Combination - elevation 5,600 ft., in Lower Willow Creek drainage northwest of Philipsburg.  
 C Peterson Meadows - elevation 7,200 ft., in Flint Creek drainage south of Georgetown Lake, ISFS-SCS cooperative site.  
 D Skalkaho Summit - elevation 7,250 ft., on Bitterroot-Rock Creek divide near Skalkaho Pass south of Philipsburg and west of Hamilton.



## RUBY-MADISON RIVERS

- A Divide - elevation 7,800 ft., near Ruby-Beaverhead River divide near Divide Guard Station south of Virginia City.  
 B Tepee Creek - elevation 8,000 ft., in West Fork Madison River drainage West of West Yellowstone.  
 C West Yellowstone - elevation 6,700 ft., in Madison River drainage at West Yellowstone.



## AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

### GOVERNMENT AGENCIES

- Canada  
 Water Survey of Canada, Calgary, Department of the Environment  
 Water Resources Service, Department of Lands, Forests and Water Resources,  
 British Columbia  
 Alberta Environment, Edmonton, Alberta  
 Federal  
 Department of the Army - Corp of Engineers  
 Department of Agriculture - Forest Service  
 - Soil Conservation Service  
 Department of Commerce  
 - NOAA  
 Department of Interior  
 - National Weather Service  
 - Bonneville Power Administration  
 - Bureau of Indian Affairs  
 - Bureau of Reclamation  
 - Fish and Wildlife Service  
 - Geological Survey  
 - National Park Service

### STATE AGENCIES

- Montana Conservation Districts  
 Montana Department of Fish and Game  
 Montana Department of Natural Resources and Conservation  
 Montana State University - Agricultural Experiment Station  
 University of Montana - School of Forestry  
 DNRC - State Forester

### PRIVATE ORGANIZATIONS

- Montana Power Company  
 Butte Water Company  
 The Anaconda Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

# SNOW SURVEYS

DRAINAGE BASIN and/or SNOW COURSE	Elevation	THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	Average
NAME					Last Year	
FATTY CREEK	5500	3/29	67	30.3	20.9	24.8
FISH CREEK	8000	3/29	28	7.2	6.1	-
FISHER CREEK	9100	3/31	99	43.7	22.8	58.5
FISHER CREEK PILLW	9100	3/31	SP	40.2	23.9	55.0
FIVE SPRINGS FALLS (WY)	7500	3/31	27	8.7	11.4	7.9
FLEECER RIDGE	7500	3/30	32	12.8	7.8	-
FOULHEN	8280	3/28	47	17.4	10.8	18.2
FOREST LAKE	6400	3/31	37	15.4	13.3	12.7
FOUR MILE	6900	3/28	23	7.6	5.4	9.1
FOURTH OF JULY	3450	3/27	28	8.9	3.8	-
FRED BURR PASS	8000	3/29	65	26.1	15.9	28.2
FRIDAY HILL	4620	3/27	42	18.4	11.6	-
FROHNER MEADOWS	6460	3/28	25	8.4	6.4	-
FROHNER MEADOWS PILLW	6480	3/28	SP	9.9	6.9	-
GARVER CREEK	4250	3/28	27	9.8	4.9	12.8
GARVER CREEK PILLW	4250	3/31	SP	9.1	6.7	10.4
GOAT MOUNTAIN	7000	4/02	34	12.5	4.8	11.8
GOLD CREEK LAKE	7200	3/27	43	15.8	8.4	17.1
GOLD STONE	8100	3/30	51	19.6	8.8	17.9
GRASSHOPPER	7000	3/27	24	8.4	6.8	5.9
GRAVE CREEK	4300	3/27	40	17.3	9.3	19.4
GRAVE CREEK PILLW	4300	3/27	SP	16.3	10.4	-
GRIFFIN CREEK DIVIDE	5150	3/29	27	11.0	6.6	12.4
GRIZZLY PEAK	8400	3/30	36	11.0	12.8	17.5
HALVERSON CREEK (IO)	4850	3/29	91	40.8	26.5	50.7
HAND CREEK	5030	3/29	31	12.0	8.2	-
HAND CREEK PILLW	5030	3/29	SP	12.8	8.2	-
HAWKINS LAKE	6450	3/28	65	28.7	15.7	32.8
HAWKINS LAKE PILLW	6450	3/31	SP	24.6	14.6	30.4
HATMAKER	6050	3/28	45	14.6	-	13.6
HEART LAKE TRAIL	4800	3/31	44	18.1	11.6	23.4
HENGEN DAM	6550	3/28	39	17.3	7.8	11.6
HELL ROARING DIVIDE	5770	3/28	66	28.6	20.6	34.0
HERRIG JUNCTION	4850	3/28	54	25.1	15.8	-
HIGHWOOD DIVIDE	5650	3/31	26	9.6	13.0	-
HIGHWOOD STATION	4600	3/29	15	3.9	9.2	-
HOOD MEADOW	6600	3/29	29	10.4	9.7	12.0
HOODOO BASIN	6000	3/31	108	47.7	25.0	53.8
HOODOO CREEK	5900	3/31	100	43.5	22.4	50.3
INOPEXENCE	7850	3/31	45	18.9	12.8	19.1
INTERGAARD	6450	3/31	17	5.6	5.6	9.2
ISLAND PARK (IO)	6310	3/30	39	18.2	6.4	16.4
JACK CREEK	7500	3/29	25	8.2	6.4	6.1
JAMNKE LAKE TRAIL	7200	3/31	32	11.2	4.8	9.7
JOHNSON PARK	6450	3/30	24	9.6	5.8	7.2
KELLER CREEK	3300	3/29	15	5.9	3.6	11.1
KILGORE (IO)	6200	3/29	31	13.8	3.2	10.9
KINGS HILL	7500	3/27	49	17.3	4.2	15.2
KISHENEHN	3890	3/29	19	5.7	2.8	8.4
KIWANIS CAMP	3720	3/28	10	3.0	2.2	-
LAKE CAMP (WY)	7850	4/01	31	11.8	4.8	9.9
LAKE CREEK	6100	3/31	20	7.2	4.2	7.5
LAKEVIEW CANYON	6930	3/31	30	10.2	3.7	13.6
LAKEVIEW RIDGE	7400	3/31	27	9.2	3.6	11.6
LEMHI PASS	7480	3/26	32	11.0	5.6	9.2
LEMHI RIDGE	8100	3/26	37	12.9	6.1	10.4
LEMHI RIDGE PILLW	8100	3/26	SP	13.2	7.0	-
LICK CREEK	6860	3/29	28	9.3	9.9	10.6
LICK CREEK PILLW	6860	3/29	SP	7.6	13.1	10.6
LITTLE PARK	7400	3/28	52	20.0	13.6	17.0
LOGAN CREEK	4300	3/29	19	6.8	4.4	8.0
LOLO PASS (IO)	5230	3/30	62	28.4	15.4	32.8
LOST HORSE	5940	3/30	81	36.4	17.4	33.7
LOST SOUL	4800	3/31	26	11.4	8.6	17.2
LOWER TWIN	7900	3/28	55	22.1	12.7	22.5
LUBRECHT FLUME	4200	3/29	5	1.8	5.0	5.1
LUBRECHT FOREST # 3	5450	3/31	10	3.8	5.5	7.4
LUBRECHT FOREST # 4	4650	3/31	1	.3	1.5	2.8
LUBRECHT FOREST # 6	4040	3/31	0	.0	1.4	2.8
LUBRECHT HYDROPLT	4200	3/29	0	.0	1.6	3.2
MADISON PLATEAU	7750	3/27	60	25.8	7.5	22.3
MADISON PLATEAU PILLW	7750	3/27	SP	25.5	12.5	23.2
MAHIAS PASS	5250	3/28	38	14.2	7.4	19.6
MAYNARD CREEK	6210	3/30	56	23.8	15.4	19.4
MAYNARD CREEK PILLW	6210	3/30	SP	15.0	9.9	12.7
MEADOW CREEK PILLW	4000	3/29	SP	5.1	5.0	-
MIDDLE MILL CREEK	7850	3/30	45	19.8	9.7	16.6
MINERAL CREEK	4000	3/30	39	14.0	11.7	20.0
MIRRO LAKE #6 (AL)	6600	3/30	35	9.6	6.9	12.5
MONUMENT PEAK	8800	3/31	75	28.5	20.0	27.8
MOULTON RESERVOIR	6850	3/30	15	5.2	3.9	-
MOUNT LOCKHART	6400	3/28	59	24.4	12.2	25.0
MOUNT LOCKHART PILLW	6400	3/28	SP	22.9	12.4	22.5
MT. EISENHOWER #10 (AL)	5000	3/31	15	4.1	3.2	5.5
MUO LAKE	7650	3/31	56	25.1	9.2	23.0
NEW WORLD	6900	3/28	40	15.8	16.0	16.3
NEWTON MOUNTAIN	5600	3/27	74	31.2	17.0	-
NEZ PERCE CAMP	5580	3/28	45	16.9	11.7	15.3
NEZ PERCE CAMP PILLW	5580	3/28	SP	18.1	10.6	-
NEZ PERCE PASS	6570	3/28	44	19.2	12.5	17.3
NOISY BASIN	6040	3/28	115	49.1	41.0	-
NOISY BASIN PILLW	6040	3/28	SP	41.2	35.2	-
NOISY CREEK	3600	3/28	6	2.6	5.2	-
NORTH FK. ELK CREEK	6250	3/29	31	12.8	8.8	12.7
NORTH FK. ELK CREEK PILL	6250	3/29	SP	14.5	8.8	13.1
NORTH FORK JOCKO	6330	3/30	110	50.5	35.1	49.6
NORTH MEADOW	7500	3/28	24	7.1	4.7	9.2
NOTCH	8500	3/26	50	17.4	12.4	16.3
PALISADE CREEK	8250	3/31	76	35.2	14.3	31.4
PIETERSON MEADOWS	7200	3/28	32	9.3	7.6	10.1
PETERSON MEADOWS PILLW	7200	3/28	SP	9.2	7.2	-
PICKET PIN U	9450	4/03	63	25.0A	20.0	-
PICKET PIN LOWER	6200	3/31	0	.0	.3	-
PICKET PIN MIDDLE	7250	3/31	25	10.1	8.4	-
PICKET PIN UPPER	8100	3/31	52	19.1	11.9	-
PICKFOOT CREEK	6650	3/28	34	12.8	-	-
PICNIC GROUNDS	6200	3/30	13	4.2	3.1	4.6
PIKE CREEK	5930	3/26	63	28.0	15.2	-
PIKE CREEK PILLW	5930	3/26	SP	26.9	15.7	-
PIPESTONE PASS	7200	3/30	12	4.0	4.2	6.2
PIPESTONE UPPER #2 (AL)	5300	3/31	24	6.9	4.5	8.9
PLACER BASIN F	8600	4/03	53	21.0A	17.0	-
POORMAN CREEK	5100	3/31	66	31.8	20.5	38.0
POORMAN CREEK PILLW	5100	3/31	SP	29.2	19.8	32.1
PORCUPINE	6500	3/29	29	10.1	9.0	8.1
PORCUPINE PILLW	6500	3/29	SP	8.5	8.1	-
POTOMAGETON PARK	7150	3/30	36	17.1	8.2	19.0







# SNOW SURVEYS

DRAINAGE BASIN and/or SNOW COURSE	Elevation	THIS YEAR		PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)
NAME				Last Year	Average
HEED MOUNTAIN	6000	3/31	42	17.2	8.3
HEED TOP	5260	3/27	63	26.4	14.1
ROCK CREEK	5600	3/24	41	13.9	10.2
ROCK CREEK MEADOWS	8160	3/31	70	25.7	17.9
ROCKY PLAK	8000	3/27	47	16.7	8.3
ROCKY PLAK PILLW	8000	3/27	SP	16.7	9.7
ROCKY BOY	4700	3/28	23	7.8	6.4
ROCKY BOY PILLW	4700	3/28	SP	8.5	3.0
SACAJAWEA	6550	3/30	47	21.0	16.0
SAULE MOUNTAIN	7940	3/29	68	30.5	12.4
SAULE MOUNTAIN PILLW	7940	3/29	SP	30.1	13.0
SAWTELL MOUNTAIN (ID)	8710	3/30	90	37.8	13.7
SENTINEL CREEK	8300	3/30	68	28.6	13.2
SHOWER FALLS	8100	3/29	72	29.3	24.0
SHOWER FALLS PILLW	8100	3/29	SP	25.9	22.6
SILVER HUN	6630	4/01	2	8	5.9
SKALKAHO SUMMIT	7260	3/28	64	27.6	14.6
SKALKAHO SUMMIT PILLW	7260	3/28	SP	29.3	11.4
SLAG-A-MELT LAKE	8750	3/28	74	30.8	11.9
SLIDE ROCK MOUNTAIN	7100	3/28	44	16.9	12.2
SMUGGLER MINE	6960	3/30	32	12.3	5.7
SOUTH FORK SHIELDS	8100	3/29	72	30.2	26.0
SPUR PARK	8000	3/30	66	26.9	18.6
STAHL PEAK	6050	3/27	94	40.3	24.2
STAHL PEAK PILLW	6050	3/27	SP	34.2	20.2
STAK LAKE	9650	4/03	103	46.0A	27.0
STEAMBOAT POINT (WY)	7500	3/29	27	7.7	13.3
STEMPLE PASS	6600	3/28	53	11.9	8.8
STUMM LAKE	7780	3/28	42	16.4	9.6
STYKER BASIN	6180	3/28	77	32.4	20.4
STUART MILL	6500	3/31	0	0	5.2
SUGAR CREEK	5960	3/26	0	0	1.6
SUGARLOAF	7350	3/31	20	7.6	8.2
TARGHEE PASS (ID)	7000	3/30	37	15.4	6.1
TAYLOR PEAKS	8500	3/24	63	24.3	16.2
TAYLOR PEAKS PILLW	8500	3/24	SP	20.9	12.7
TAYLOR HOU	4080	3/28	17	6.8	5.0
TEN MILE LUMER	6600	3/27	21	6.6	6.2
TEN MILE MIDDLE	6800	3/27	37	12.7	7.6
TEN MILE UPPER	8000	3/27	40	15.8	8.8
TEPEL CREEK	8000	3/31	50	18.2	7.0
TEPEL CREEK PILLW	8000	3/31	SP	15.2	6.1
THUMB DIVIDE (WY)	7900	3/29	52	20.8	6.8
TIMBERLINE CREEK	8850	4/01	34	9.8	9.6
TRAIL CREEK	7090	3/26	32	9.8	4.4
TV MOUNTAIN	6800	3/30	51	21.0	11.6
TWELVEMILE CREEK	5600	3/30	46	19.8	14.4
TWELVEMILE CREEK PILLW	5600	3/30	SP	20.6	13.6
TWENTY-ONE MILE	7150	3/29	48	20.5	7.8
TWIN LAKES	6510	3/30	101	48.4	23.8
TWIN LAKES PILLW	6400	3/30	SP	44.9	24.3
VALLEY VIEW (ID)	6500	3/30	35	15.0	6.3
WALORON	5600	3/28	28	10.6	7.2
WALORON PILLW	5600	3/28	SP	10.7	6.4
WARM SPRINGS	8250	3/30	50	20.3	-
WARM SPRINGS PILLW	8250	3/30	SP	26.7	-
WEASEL DIVIDE	5450	3/27	76	32.2	17.0
WEST ROSEHOU	7500	3/22	32	10.2	12.4
WEST YELLOWSTONE	6700	3/28	33	14.4	5.0
WHISKEY CREEK	6800	3/28	39	26.0	8.8
WHISKEY CREEK PILLW	6800	3/28	SP	20.8	8.4
WHITE ELEPHANT (ID)	7700	3/30	68	30.0	10.2
WHITE MILL	8700	3/31	83	34.2	15.8
WHITE MILL PILLW	8700	3/31	SP	32.5	16.0
WHITE PINE RIDGE	8850	3/26	14	3.6	3.9
WILLOW CREEK	6500	3/30	20	5.9	9.7
WOLVERINE (WY)	7650	3/29	42	16.8	5.8
WRUNG CREEK	5700	3/31	32	13.3	7.1
WRUNG RIDGE	8800	3/31	50	20.9	11.5

Average based on 1958-72 period. A - Aerial observation; water content estimated. SP - Snow Pillow observation; water content only.

DRAINAGE BASIN and/or SNOW COURSE	Elevation	THIS YEAR		PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)
NAME				Last Year	Average
LATE ARRIVING DATA					
Badger Pass	6900	4/03	76	34.7	26.6
Beaver Lake	5900	4/03	47	21.5	14.4
Big Sky	7700	4/01	42	17.6	12.9
Black Mountain	7750	4/04	41	15.6	10.8
Blue Lake	5900	4/03	50	23.0	18.5
Burgess R.S. #2 (WY)	7900	3/29	28	7.7	15.6
Carter Creek	7400	4/02	14	3.4	4.7
Cole Creek Pillo	7850	3/30	SP	10.6	15.0
Colley Creek	6300	4/04	26	9.6	8.7
Dix Hill	6400	4/02	19	7.7	7.0
East Entrance (WY)	7000	4/01	27	11.4	4.8
Five Bull	5700	4/03	18	6.0	3.8
Freight Creek	6000	4/03	37	15.0	11.8
Gibbons Pass	7100	4/03	56	25.9	9.5
Gunsight Lake	6300	4/03	86	41.8	27.8
Holbrook	4530	4/01	21	7.3	7.4
King Creek Saddle	4550	3/28	17	6.8	-
King Springs	4150	3/30	15	5.5	-
Lone Mountain	8880	4/01	58	24.9	16.0
Lookout (ID)	5250	3/29	74	32.2	18.6
Lupine (WY)	7300	4/03	29	10.0	5.4
Hill Creek	7500	4/04	35	13.7	12.9
Mission Mountain	5050	3/27	26	9.5	-
Norris Basin (WY)	7500	4/03	29	11.9	6.1
Northeast Entrance	7400	4/01	30	11.8	5.4
Northeast Entrance Pillo	7400	4/01	SP	11.6	6.4
Old Faithful (WY)	7360	4/03	34	14.1	5.2
Ophir Park	7150	4/02	48	20.6	14.0
Silver Run Pillo	6630	4/01	SP	3.7	5.4
Smith Creek (ID)	4800	3/31	89	37.6	25.1
Spotted Bear Mountain	7000	4/03	32	14.4	13.2
Spur Park Pillo	8100	3/30	SP	28.1	20.0
Stuart Mountain	7400	3/30	82	37.2	19.2
Sylvan Pass (WY)	7100	4/01	37	15.2	6.7
Trinkus Lake	6100	4/03	93	44.3	38.3
Twin Creeks	3580	4/03	21	9.5	11.2
Upper Holland Lake	6200	4/03	82	38.0	29.8

Average based on 1958-72 period. A - Aerial observation; water content estimated. SP - Snow Pillow observation; water content only.

## RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage		
			This Year	Last Year	Average
COLUMBIA					
Kootenai	Kootenai	5,694.0	1,567.0	2,340.0	-
Flathead	Hungry Horse	3,428.0	1,605.0	2,186.0	2,157.0
	Flathead Lake	1,791.0	695.5	611.4	794.5
	Camas (4)	45.2	8.8	16.7	27.1
	Mission Valley (S)	100.3	51.6	48.3	38.1
Clark Fork	Georgetown Lake	31.0	23.4	28.5	23.8
	Lower Willow Creek				
	Nevada Creek	12.6	7.5	6.5	7.6
	Noxon Rapids	334.6	255.0	114.3	198.5
Bitterroot	Painted Rocks	31.7	5.3	7.3	20.2
	Como	34.9	14.0	-	15.8
MISSOURI					
Beaverhead	Llmo	84.0	-	-	33.8
	Clark Canyon	257.2	169.4	171.2	145.6
Ruby	Ruby	38.8	-	30.3	30.6
Madison	Hebgen Lake	337.5	195.1	242.2	206.3
	Ennis Lake	41.0	35.8	33.2	36.3
Gallatin	Middle Creek	8.0	4.2	-	3.9
Missouri	Canyon Ferry	2,043.0	1,449.0	1,709.0	1,561.0
	Hauser & Helena	61.9	63.0	63.0	54.2
	Lake Helena	10.4	10.9	10.9	8.3
	Holter Lake	81.9	80.8	80.7	57.9
	Fort Peck Lake	18,910.0	15,660.0	15,830.0	13,310.0
Smith	Smith River	10.6	-	10.8	7.1
	Newlan Creek	12.4	4.4	0.0	-
Musselshell	Bair	7.0	-	5.0	5.4
	Martinsdale	23.1	-	15.6	7.8
	Deadman's Basin	72.2	-	47.1	49.5
Sun	Gibson	99.0	33.6	69.1	43.6
	Willow Creek	32.2	18.3	27.2	21.0
	Plshkun	32.0	18.6	21.8	17.2
Marias	Lower Two Medicine	11.9	-	7.8	-
	Four Horns	19.2	-	-	-
	Swift	30.0	-	21.0	19.7
	Lake Frances	111.9	-	77.7	17.3
Milk	Elwell (Tiber)	1,347.0	619.0	489.2	598.9
	Beaver Creek	3.5	1.4	2.2	-
	Fresno	127.2	140.7	73.1	86.5
	Nelson	66.8	9.5	45.6	40.7
HUDSON BAY					
St. Mary's	Lake Sherburne	66.2	32.6	17.7	24.7
YELLOWSTONE					
Stillwater	Mystic Lake	21.0	0.1	0.0	4.7
Clark's Fork	Cooney	27.4	16.1	15.8	15.6
Tongue	Tongue River	68.0	-	44.6	38.4
Big Horn	Big Horn Lake	1,356.0	773.8	848.0	796.2

Average based on 1958-72 period.



## SOIL MOISTURE

DRAINAGE BASIN and/or STATION		Profile (Inches)			Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity	This Year		Last Year	Average	
COLUMBIA RIVER DRAINAGE								
<u>Kootenai</u>								
Baree Trail	3800	48	7.5	3/29	6.6	5.6	6.4	
Murphy Lake R. S.	3000	48	22.6	4/3	22.3	19.7	21.0	
Raven	3050	48	23.0	3/30	17.5	14.0	18.7	
<u>Flathead</u>								
Desert Mountain	5600	54	8.4	3/30	9.7	5.3	7.5	
Marias Pass	5250	54	6.5	3/28	7.4	4.3	5.6	
<u>Clark Fork</u>								
Black Pine	7100	48	10.0	3/29	7.7	6.6	7.4	
Lubrecht Forest	4100	48	26.8	4/2	15.7	14.0	19.6	
Seeley Lake R.S.	4030	48	11.9	4/4	12.4	6.0	9.8	
Skalkaho Summit	7260	48	10.8	3/28	9.8	8.4	9.6	
<u>Bitterroot</u>								
Gibbons Pass	7100	48	7.1	3/29	6.1	3.1	4.8	
Lolo Pass	5250	48	10.6	3/31	8.3	7.3	6.2	
MISSOURI RIVER DRAINAGE								
<u>Beaverhead</u>								
Lakeview	6700	48	15.3	3/31	14.1	8.1	9.9	
<u>Madison</u>								
West Yellowstone	6700	48	6/5	4/1	2.4	1.4	2.5	
<u>Gallatin</u>								
Bridger Bowl	7250	48	17.0	3/30	14.7	15.6	16.0	
College Site No. 2	4856	54	17.7	3/31	17.3	8.6	16.4	
Lick Creek	6860	48	18.8	3/29	14.0	11.8	16.0	
Twenty-One Mile	7150	48	10.0	4/2	7.3	2.2	4.3	
<u>Missouri Main Stem</u>								
Kings Hill	7420	48	11.8	3/30	8.1	4.4	6.7	
Stemple Pass	6350	48	5.9	3/31	5.6	3.5	4.4	
<u>Milk</u>								
Beaver Creek	3950	48	20.9	3/28	18.4	9.3	12.5	
Rocky Boy	4700	36	10.1	3/28	9.7	6.9	7.7	
YELLOWSTONE RIVER DRAINAGE								
<u>Shields</u>								
Battle Ridge	6020	48	17.6	3/30	12.6	11.3	13.6	
<u>Upper Yellowstone</u>								
Northeast Entrance	7350	48	9.4	4/1	9.6	4.3	5.8	
<u>Clark's Fork</u>								
PMC Dryland	3700	48	20.7	3/31	6.1	5.7	7.9	

# Missouri River & Hudson Bay Drainages

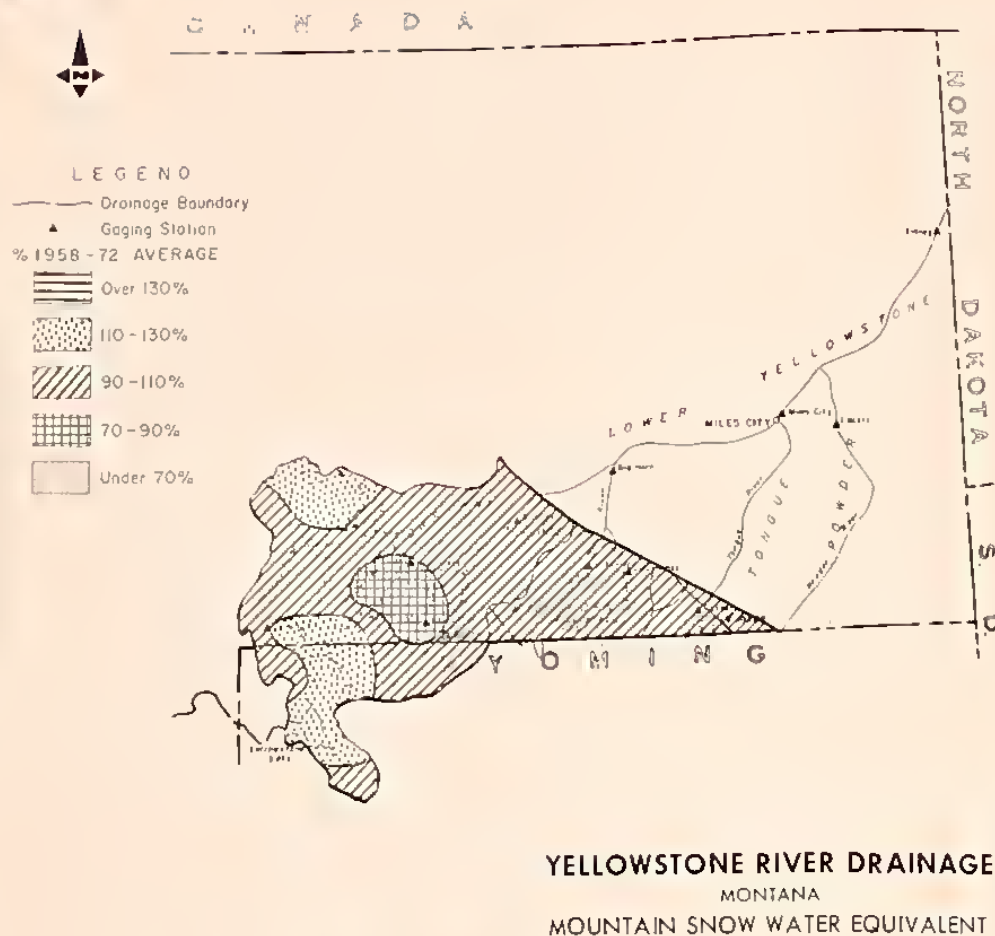
## MOUNTAIN SNOWPACK

JEFFERSON - BELOW AVERAGE IN THE SOUTH NEAR IDAHO AND ABOVE AVERAGE IN THE WESTERN PART OF THE BIG HOLE. NEAR AVERAGE OVER MOST OF THE DRAINAGE. VERY LITTLE INCREASE IN HIGH ELEVATION



# Yellowstone River Drainage

## MOUNTAIN SNOWPACK



**UPPER YELLOWSTONE** - ABOVE AVERAGE IN AND NEAR YELLOWSTONE NATIONAL PARK. SOME MELT IN LOWER ELEVATIONS DURING THE LAST TWO WEEKS IN MARCH. BELOW AVERAGE SNOWFALL FOR THE PAST MONTH.

**SHIELDS-SWEET GRASS-BIG TIMBER** - GENERALLY ABOVE AVERAGE IN THE CRAZY MOUNTAINS AND NEAR TO ABOVE AVERAGE IN THE BRIDGER MOUNTAINS. SOME DEFICIENCIES IN THE LOWER ELEVATIONS AS A RESULT OF MELT THE LAST HALF OF MARCH.

**BOULDER-STILLWATER** - ABOVE AVERAGE IN THE HIGHER ELEVATION HEADWATERS AND NEAR AVERAGE IN THE REMAINDER OF THE BOULDER RIVER DRAINAGE. SOME DEFICIENCIES IN THE STILLWATER ALONG THE NORTH-EAST SLOPE OF THE BEARTOOTH MOUNTAINS.

**ROCK CREEK-CLARK'S FORK** - ABOVE AVERAGE IN HEADWATERS OF CLARK'S FORK AND NEAR AVERAGE ELSEWHERE. BELOW AVERAGE IN RED LODGE CREEK AND PARTS OF ROCK CREEK DRAINAGES. SOME MELT IN LOWER ELEVATIONS FROM WARMER THAN NORMAL TEMPERATURES THE LAST TWO WEEKS OF MARCH. LITTLE SNOWFALL DURING MARCH.

## SUMMARY of SNOW MEASUREMENTS

RIVER BASIN AND SUB-BASIN	Number of Gauging Stations	THIS YEAR'S SNOW WATER AS PERCENT OF	
		1958-72 AVERAGE	1958-72 AVERAGE
Upper Yellowstone	11	197	116
ab Livingston	7	124	115
Shields			
Boulder & Stillwater	2	145	101
Rock Creek & Clark's Fork	6	164	102
Yellowstone (ab Big Horn River)	26	160	111
Big Horn/Wyoming	20	161	99
Little Big Horn	4	76	102
Big Horn (Total)	31	181	101
Tongue	5	70	92
Powder	3	108	98
Yellowstone (Total)	61	151	106

**BIGHORN** - GENERALLY NEAR OR ABOVE AVERAGE IN THE WYOMING HEADWATERS.

**LITTLE BIGHORN** - A LITTLE ABOVE AVERAGE IN HIGHER ELEVATIONS. SOMEWHAT BELOW AVERAGE IN LOWER ELEVATIONS AS A RESULT OF MELT DURING THE LAST OF MARCH.

**TONGUE** - AVERAGE TO A LITTLE BELOW IN HIGHER ELEVATIONS. BELOW AVERAGE IN LOWER ELEVATIONS. MUCH OF THE PRAIRIE SNOWPACK HAS MELTED.

**POWDER** - NEAR AVERAGE IN HIGHER ELEVATIONS AND BELOW AVERAGE IN LOWER ELEVATIONS. MELT IN LAST HALF OF MARCH HAS GREATLY REDUCED THE PRAIRIE SNOWPACK.

## SOIL MOISTURE

RECENT SNOWMELT HAS IMPROVED SOIL MOISTURE IN MIDDLE AND LOWER ELEVATIONS. SOME DRYING OF SOILS IS STARTING IN LOWER ELEVATIONS.



## STREAMFLOW FORECASTS

### IRRIGATION WATER SUPPLIES

GENERALLY AVERAGE OR ABOVE LATE SEASON WITH ABUNDANT SUPPLIES DURING THE MAIN SNOWMELT PERIOD. SOME DEFICIENT SUPPLIES ARE EXPECTED FROM DIRECT STREAMFLOW DIVERSIONS IN RED LODGE CREEK DRAINAGE.

**UPPER YELLOWSTONE** - ABOUT 10 PERCENT ABOVE AVERAGE RUNOFF FOR APRIL THROUGH SEPTEMBER PERIOD.

**SHIELDS-SWEET GRASS** - ABOVE AVERAGE RUNOFF.

**BOULDER-STILLWATER** - ABOVE AVERAGE FLOW FROM BOULDER RIVER WITH NEAR AVERAGE RUNOFF FOR THE STILLWATER RIVER. BELOW AVERAGE RUNOFF FROM SMALLER STREAMS WITH LOWER ELEVATION HEADWATERS.

**ROCK CREEK-CLARK'S FORK** - GENERALLY ABOVE AVERAGE RUNOFF. BELOW AVERAGE FOR RED LODGE-WILLOW CREEK DRAINAGES AND OTHER SMALLER STREAMS THAT DO NOT HAVE

HEADWATERS EXTENDING INTO THE MAIN BEARTOOTH MOUNTAIN RANGE.

**YELLOWSTONE RIVER** - STREAMFLOW FOR THE YELLOWSTONE RIVER BELOW LIVINGSTON IS FORECAST AT ABOUT 10 PERCENT OF AVERAGE. STREAMFLOW IS EXPECTED TO HOLD UP WELL INTO THE IRRIGATION SEASON.

**BIGHORN** - ABOVE AVERAGE INFLOW TO YELLOWTAIL RESERVOIR.

**LITTLE BIGHORN** - NEAR TO A LITTLE BELOW AVERAGE RUNOFF FROM SNOWMELT IN THE BIGHORN MOUNTAINS.

**TONGUE-POWDER** - AVERAGE TO A LITTLE ABOVE AVERAGE RUNOFF FROM MOUNTAIN SNOWMELT.

## WATER SUPPLY OUTLOOK

STREAM or AREA	Flow Period	
	Spring Season	Little Season
Yellowstone above Livingston	Ex	Ex
Shields	Ex	Ex
Boulder	Ex	Ex
Sweetgrass-Big Timber	Ex	Ex
Stillwater	Avg	Avg
Rock Creek	Avg	Avg
Clark's Fork	Ex	Ex
Yellowstone above Big Horn	Ex	Ex
Big Horn	Avg	Avg
Little Big Horn	Avg	Avg
Tongue	Avg	Avg
Powder	Avg	Avg
Lower Yellowstone	Ex	Ex

BASIN, STREAM AND FORECAST POINT	April-September				April-July			
	THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD	
	THOUSAND ACRES	PERCENT OF AVERAGE	THOUSAND ACRES	PERCENT OF AVERAGE	THOUSAND ACRES	PERCENT OF AVERAGE	THOUSAND ACRES	PERCENT OF AVERAGE
YELLOWSTONE RIVER at Corwin Springs	2,170	109	1,129	1,996	1,820	110	942	1,662
YELLOWSTONE RIVER near Livingston	2,500	108		2,317	2,090	109		1,926
BOULDER RIVER at Big Timber	425	112		379	400	114		350
STILLWATER RIVER near Absarokee (1)	590	100		591	490	99		494
CLARK'S FORK RIVER near Belfry	705	116		607	635	116		546
ROCK CREEK near Red Lodge	122	111	61.0	110	94.0	113	45.0	84.0
INFLOW COONEY RESERVOIR near Boyd (2)	36.0	70		51.5	29.0	71		41.1
YELLOWSTONE RIVER at Billings	4,600	108	2,178	4,246	3,950	109	1,822	3,613
BIG HORN RIVER near St. Xavier (3)	2,100	114	618	1,849	1,950	114	559	1,706
LITTLE BIG HORN RIVER near Lodgegrass (4)	140	96		146	125	97		129
YELLOWSTONE RIVER at Miles City (5)	6,750	106		6,378	6,050	109		5,555
YELLOWSTONE RIVER near Sidney (5)	7,150	106		6,665	6,450	109		5,895

- (1) Adjusted for storage in Mystic Lake.  
(2) Sum of Red Lodge Creek above reservoir and Willow Creek near Boyd.  
(3) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake and Big Horn.

- (4) Sum Little Big Horn below Pass Creek and Lodgegrass Creek near Wyola.  
(5) Adjusted for storage in Buffalo Bill, Boysen and Yellowstone Reservoirs.

Average based on 1958-77 period.